

CLAIMS:

1. A network device having a plurality of ports, said network device comprising:

address resolution logic (ARL) configured to perform address resolution of data packets received at ports of said plurality of ports and to switch data packets from a first network port of said plurality of ports to a second network port of said plurality of ports;

a first switch having a first group of ports which are a subset of said plurality of ports and are numbered by a first numbering scheme, a first rate control logic for performing rate control functions related to switching data packets between said network ports, and a first local communications channel for transmitting messages between said first group of ports and said rate control logic, said first switch being configured to generate rate control messages based on data packet traffic to said first group of ports;

a second switch having a second group of ports which are a subset of said plurality of ports and are numbered by a second numbering scheme different from said first numbering scheme, a second rate control logic for performing rate control functions related to switching data packets between said network ports, and a second local communications channel for transmitting messages between said second group of ports and second rate control logic, said second switch being configured to generate rate control messages based on data packet traffic to said second group of ports;

a CPU coupled to said first switch and said second switch and configured to control said first and second switch; and

wherein a first link port of said first group of ports is coupled to a second link port of said second group of ports, said ARL is configured to perform address resolution based on said first numbering scheme and said second numbering scheme, said first link port is configured to generate a local rate control message and relay said local rate control message to said first local communications channel, and said first switch is configured to perform a rate control function related to said second switch based on said local rate

control message.

2. The network device of claim 1, wherein said first local communications channel comprises an S channel of said first switch, and said second local communications channel comprises an S channel of said second switch.

3. The network device of claim 2, wherein at least one of said first and second switch is configured to generate rate control messages which comprise side band messages.

4. The network device of claim 1, wherein said first switch is configured to generate a first rate control message including data relating to said first link port being congested and said rate control function includes preventing data packets being sent to said second switch.

5. The network device of claim 1, wherein said first switch is configured to generate a first rate control message comprising a HOL status notification related to said first link port, and said first switch is configured to perform a rate control function relating to a HOL status notification relating to all of said second group of ports based on said first rate control message.

6. The network device of claim 4, wherein at least one of said first and second switch is configured to generate rate control messages which comprise a source bit identifying said first switch as a source of said side band message and a port bitmap identifying a congested port of said first group of ports based on said first numbering scheme.

7. The network device of claim 4, wherein said first group of ports are configured to drop all packets destined for said second switch when said first rate control message includes data relating to said first link port being

congested.

8. The network device of claim 5, wherein said first group of ports are configured to drop all packets destined for said second switch when said first rate control message comprises a HOL status notification related to said first link port.

9. The network device of claim 8, wherein each of said first group of ports are configured to receive said first rate control message and covert said second rate control message into a bit map in order to drop all packets destined for said second switch when said first rate control message comprises a HOL status notification related to said first link port.

10. The network device of claim 9, wherein each of said second group of ports is configured to copy said bit map into an active port register in order to prevent said port from sending any data packets to said second switch.

11. A method for communication of rate control messages between two switches, said method comprising the steps of:

designating a first plurality of ports of a first switch by a first numbering scheme;

designating a second plurality of ports of a second switch by a second numbering scheme;

coupling a first link port of said first plurality of ports to a second link port of said second plurality of ports;

configuring said first switch to generate a first rate control message at said first switch and relay said first rate control message to a first local communications channel of said first switch; and

configuring said first switch to perform a rate control function related to said second switch based on said first rate control message.

12. The method of claim 11, wherein said configuring said first switch to generate a first rate control message step includes generating said first rate control message including data relating to said first link port being congested, and said configuring said first switch to perform a rate control function step includes configuring said first switch to perform a rate control function including preventing data packets from being sent to said second switch.

13. The method of claim 11, wherein said configuring said first switch to generate a first rate control message step includes generating said first rate control message comprising a HOL status notification relating to said first link port being congested, and said configuring said first switch to perform a rate control function step includes configuring said first switch to perform a rate control function including a rate control function relating to a HOL status notification relating to all of said second group of ports based on said first rate control message.

14. The method of claim 12, wherein said configuring said first switch to perform a rate control function step includes configuring said first group of ports are to drop all packets destined for said second switch when said first rate control message includes data relating to said first link port being congested.

15. The method of claim 13, wherein said configuring said first switch to perform a rate control function step includes configuring said first group of ports are to drop all packets destined for said second switch when said first rate control message comprises a HOL status notification related to said first link port.

16. A network device having a plurality of ports, said network device

comprising:

address resolution logic (ARL) means for performing address resolution of data packets received at ports of said plurality of ports and to switch data packets from a first network port of said plurality of ports to a second network port of said plurality of ports;

a first switch means having a first group of ports which are a subset of said plurality of ports and are numbered by a first numbering scheme, a first rate control logic means for performing rate control functions related to switching data packets between said network ports, and a first local communications channel means for transmitting messages between said first group of ports and said rate control logic means, said first switch means being configured to generate rate control messages based on data packet traffic to said first group of ports;

a second switch means having a second group of ports which are a subset of said plurality of ports and are numbered by a second numbering scheme different from said first numbering scheme, a second rate control logic means for performing rate control functions related to switching data packets between said network ports, and a second local communications channel means for transmitting messages between said second group of ports and second rate control logic means, said second switch being configured to generate rate control messages based on data packet traffic to said second group of ports; and

a processor means coupled to said first switch means and said second switch means for controlling said first and second switch means;

wherein a first link port of said first group of ports is coupled to a second link port of said second group of ports, said ARL means is for performing address resolution based on said first numbering scheme and said second numbering scheme, said first link port is configured to generate a local rate control message and relay said local rate control message to said first local communications channel means, and said first switch means is configured to perform a rate control function related to said second switch

based on said local rate control message.

17. The network device of claim 16, wherein said first local communications channel means comprises an S channel of said first switch means, and said second local communications channel comprises an S channel of said second switch means.

18. The network device of claim 17, wherein at least one of said first and second switch means is configured to generate rate control messages which comprise side band messages.

19. The network device of claim 16, wherein first link port is configured to generate a first rate control message including data relating to said first link port being congested and said first switch means is configured to perform a rate control function including preventing data packets being sent to said second switch means.

20. The network device of claim 16, wherein first link port is configured to generate a first rate control message comprising a HOL status notification related to said first link port, and said first switch means is configured to perform a rate control function relating to a HOL status notification relating to all of said second group of ports based on said first rate control message.

21. The network device of claim 19, wherein at least one of said first and second switch means is configured to generate rate control messages which comprise a source bit identifying said first switch as a source of said side band message and a port bitmap identifying a congested port of said first group of ports based on said first numbering scheme.

22. The network device of claim 19, wherein said first group of ports

are configured to drop all packets destined for said second switch means when said first rate control message includes data relating to said first link port being congested.

23. The network device of claim 20, wherein said first group of ports are configured to drop all packets destined for said second switch means when said first rate control message comprises a HOL status notification related to said first link port.